

REMARKS

Claims 11, 16, and 21-26 are now of record in the case. Claim 11 has have been amended and claim 15 has been cancelled. No new claims have been added. Claims 1-10, 12-14, and 17-20 were cancelled previously.

Support for the amendment to the claims is inherent in the original disclosure. Specifically, claim 11 has simply been amended to incorporate the limitation of original claim 15 therein. Thus, the amendment does not raise new issues.

Rejection Under 35 U.S.C. §102

Claims 11 and 15 have been rejected under 35 U.S.C. 102(b) as being anticipated by Osborne. Applicants respectfully disagree.

Osborne discloses methods and compositions for controlling whiteflies using the fungus *Paecilomyces fumosoroseus*. Spores of the fungus are formulated in water with a wetting agent and an optional powder or granular carrier (col. 4, line 63 to col. 5, line 30).

The instant invention is drawn to compositions for control of termites. Applicants have discovered that strains of the entomopathogenic fungus of the genus *Paecilomyces* are useful for control of infestations by subterranean termites. Blastospores of *P. fumosoroseus* or the closely related *P. javanicus* are used

in a preferred embodiment (paragraph nos. 0024 and 0027). In another preferred embodiment, the fungus is formulated in a bait matrix which contains a form of cellulose (paragraph no. 0029). The fungus may also be formulated with optional attractants such as a termite pheromone or a termite aggregation attractant (paragraph no. 0031). This is not disclosed or suggested by Osborne.

Independent claim 11 is specifically limited to a component selected from one or more of a termite aggregation attractant, a termite pheromone, and a bait matrix comprising a cellulose-containing material. None of these components are disclosed or suggested by Osborne.

Osborne discloses using *Paecilomyces* as a biocontrol agent against an insect, the whitefly, which is entirely unrelated to the termites disclosed and claimed in the instant invention. Because the insects are unrelated, a practitioner of ordinary skill in the art would have no motivation to modify the composition of Osborne to incorporate any of the claimed components, i.e., a termite aggregation attractant, a termite pheromone or a bait matrix comprising a cellulose-containing material, therein. A practitioner of ordinary skill in the art would have no motivation to use any of these components, which are suited for controlling termites, in a composition for controlling whiteflies such as disclosed by Osborne.

Rejection Under 35 U.S.C. §102

Claims 11 and 15 have been rejected under 35 U.S.C. 102(b) as being anticipated by Jackson. Applicants respectfully disagree.

Jackson discloses a novel technique for producing blastospores of *Paecilomyces fumosoroseus* which may be subsequently used as a biocontrol agent against insects such as the whitefly and the Russian wheat aphid (col. 6, lines 23-27). The patent discloses that the blastospores may combined with lactose and bovine serum albumin and dried for storage (col. 11, lines 26-30), and may be formulated with water and diatomaceous earth for application against whiteflies (col. 11, lines 50-55).

Jackson does not disclose or suggest including one or more of a termite aggregation attractant, a termite pheromone or a bait matrix comprising a cellulose-containing material, in the composition disclosed therein. None of these components are disclosed or suggested by Jackson.

As with Osborne, Jackson also teaches using *Paecilomyces* against insects, whiteflies and an aphid, which are entirely unrelated to the termites disclosed and claimed in the instant invention. Because the insects are unrelated, a practitioner of ordinary skill in the art would have no motivation to modify the composition of Jackson to incorporate any of the claimed components, i.e., a termite aggregation attractant, a termite

pheromone or a bait matrix comprising a cellulose-containing material, therein. A practitioner of ordinary skill in the art would have no motivation to use any of these components, which are suited for controlling termites, in a composition for controlling whiteflies or aphids such as disclosed by Jackson.

Rejection Under 35 U.S.C. §103

Claims 11, 15, 16, and 21-26 have been rejected under 35 U.S.C. §103 as being unpatentable over Khader Khan (1993, Insect Sci. Applic., 14:529-535) in view of Gunner et al. The Examiner has taken the position that it would have been obvious to formulate spores of *P. fumosoroseus* with a bait of cellulosic material for use against termites. Applicants respectfully disagree.

Khader Khan et al. teaches that *Paecilomyces fumosoroseus* is "only slightly pathogenic" against *Odontotermes obesus* (Rambur), an African and South Asian termite (page 532, lines 2-3, emphasis added). As disclosed at page 531, third complete paragraph, assays were conducted by spraying termites with aqueous suspensions of conidia of various fungal entomopathogens. Table 2 of the reference shows that the mortality rate of *O. obesus* treated with *P. fumosoroseus* was a mere 2% for workers major and workers minor, and 1% for soldiers. Of the nine fungal pathogens evaluated by Khader Khan, *P. fumosoroseus* was by far the worst,

significantly inferior to the mortality rates (as high as 80%) observed for the other fungal pathogens evaluated.

Gunner et al. relates to the biological control of termites using an entomopathogenic fungus, such as *Metarhizium anisopliae* or *Beauveria bassiana* in combination with a behavioral modifier. The behavioral modifier may be a fungus that attracts termites, such as *Gloeophyllum trabeum* or its volatile products. Alternatively, the modifier may be a fungus that is repellent to termites, such as *Metarhizium anisopliae*. **The only mention of the genus *Paecilomyces* in the disclosure is in Claims 10 and 18,** wherein it is described as being an option for the entomopathogen; and in Claims 26 and 33, wherein it is described as being an option for a fungus that is both entomopathogenic and repellent. **Nowhere in the disclosure does Gunner mention either *P. fumosoroseus* or *P. javanicus*, nor does it disclose using blastospores, nor is there any disclosure outside of the claims how the *Paecilomyces* should be formulated.** There is no teaching or suggestion that either of these species would be entomopathogenic and/or repellent.

The instant invention was described *supra*. As amended, the claims are now limited to compositions of **blastospores** of *Paecilomyces fumosoroseus* or *P. javanicus* in an amount effective to infect and kill termites, in combination with one or more components selected from a termite aggregation attractant, a

termite pheromone or a bait matrix comprising a cellulose-containing material. This is not disclosed or suggested by either of the references, taken alone or in combination. Specifically, neither Khader Khan nor Gunner disclose or suggest using blastospores of *P.fumosoroseus* or *P. javanicus*, nor do the references disclose or suggest using these blastospores in combination with a termite aggregation attractant, a termite pheromone or a bait matrix comprising a cellulose-containing material.

Applicants respectfully submit that based on the teachings of Khader Khan, there would be absolutely no motivation for the person of ordinary skill in the art to consider using blastospores of *P. fumosoroseus* or *P. javanicus* as a fungal control agent against termites. Further there would be no motivation to combine the blastospores of these fungi with a termite aggregation attractant, a termite pheromone or a bait matrix comprising a cellulose-containing material as claimed. Indeed, if anything, the disclosure of Khader Khan would teach away from the invention.

As noted above, Khader Khan teaches in Table 2 and at the top of page 532 that *Paecilomyces fumosoroseus* are "only slightly pathogenic" against an African and South Asian termite, providing mortality rate of only 2% for termite workers major and workers minor, and 1% for soldiers treated with conidia of the fungus.

Of the nine fungal pathogens evaluated by Khader Khan, *P. fumosoroseus* was by far the worst, significantly inferior (by a factor of 40 times) to the mortality rates as high as 80% observed for the other fungal pathogens evaluated. Based on these results, there would be absolutely no motivation for the person of ordinary skill in the art to select *P. fumosoroseus* for (1) producing blastospores thereof, and then (2) combining those blastospores with one or more of a termite aggregation attractant, a termite pheromone or a bait matrix comprising a cellulose-containing material, as required by the instant claims. Indeed, the very poor activity of conidia of *P. fumosoroseus* against termites would expressly lead the skilled practitioner away from those limitations.

The disclosure of Gunner provides nothing which would overcome the deficiencies in the disclosure of Khader Khan. Gunner only mentions the genus *Paecilomyces* (and then only at claims 10 and 18) and does not disclose either *P. fumosoroseus* or *P. javanicus*. The NCBI database at:

<http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi> lists 18 named species of *Paecilomyces*, one unnamed species, and 16 isolates. This constitutes a total of 35 possibilities, of which *P. fumosoroseus* and *P. javanicus* are two. Given this large number of choices, the person of ordinary skill in the art confronted with the teachings of Gunner et al. would not have

sufficient direction or motivation to select the claimed species. Moreover, as noted above, the disclosure of Khader Khan that *P. fumosoroseus* and *P. javanicus* is "only slightly pathogenic" would expressly lead the skilled practitioner away from the use of the claimed species in a termite bait.

In addition to the comments above, applicants have unexpectedly discovered that the claimed blastospores of *Paecilomyces* exhibit significantly reduced repellency to termites than conidia such as disclosed by Khader Khan. As disclosed in instant Example 10 (the final two paragraphs) and shown in Table II, conidia of *Paecilomyces*, such as used by Khader Khan, elicited a repellant effect toward termites, demonstrated by a low percentage of penetration of termites into treated sand. In contrast, blastospores of the same *Paecilomyces* exhibited significantly less repellency toward the termites (demonstrated by a greater percentage of penetration of termites into treated sand). This decreased repellency of the claimed blastospores is unexpected and is not disclosed or suggested by the prior art.

In view of the foregoing, applicants respectfully submit that claims 11, 16, and 21-26 distinguish over the prior art of record. Allowance thereof is respectfully requested.

Respectfully submitted,



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